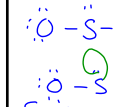
Hybridization: SO_2

Lewis structures: total v.é 6é x S, 6é x 2O → 18 é's



18 − 14 = 2

{Good enough to tell hybridization ⇒ may be missing "π" bond(s)

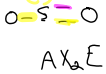
Hybridization: # σ bonds + # lone pairs = 2 + 1 = 3 hyb bnd orbitals

s + p + p = sp^2

[is this missing a π bon(s)?]

S x ⇒ é of S

S = 6é missing x



AX_2E Bent shape <120°

é pair geometry trigonal planar ⇒

Back to sp^2 hybrid.

Central atom S: $3s^2 3p^4$ Valence é conf.

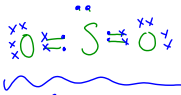
Ground state: 3s [↑↓], 3p [↑↓ | ↑ | ↑]

excited (promoted) state: 3s [↑↓], 3p [↑ | ↑ | ↑ | ↑], 3d [↑ | | | |]

hybridized state: sp^2 [↑↓ | ↑ | ↑], 3p [↑], 3d [↑]

2 sigma bonds, 1 lone pair; π bond; π bond

O = S = O

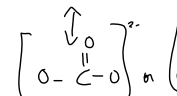


CO_3^{2-} 4 + 18 + 2 = 24 é's

skeleton: O–C–O

24 − 6 = 18; 18 − 18 = 0

C has 6



Resonance

	angle	é pair	Mshape
C	109.5°	sp^3	tetrahedral
O	<109.5°	sp^3	tetrahedral	bent

C: 2s [↑↓], 2p [↑ | ↑ | ↑]

excited: 3s [↑], 3p [↑ | ↑ | ↑ | ↑]

hybridized: sp^3 [↑ | ↑ | ↑ | ↑]

4 sigma bonds

O: 2s [↑↓], 2p [↑↓ | ↑ | ↑]

no excited state

sp^3 [↑↓ | ↑ | ↑ | ↑ | ↑ | ↑]

2 lone pairs, 2 sigma bonds

Intermolecular forces:

2 identical particles or 2 different particles

ex:

H_2O H_2O — sign, sign

CCl_4 CCl_4

H_2O (liq) sugar

CCl_4 (liq) NaCl

→ Shape of particles (structure)

→ polarity (polar or non polar) & ΔEN

Possible IMF:

metallic solid	ionic	molecular	network
V.é attracted to nuclei	ion-ion	H-bond	covalent
	NaCl	D-D	
		LDF	
		H_2O	

Nov 2-12:14 PM